

REMARKS

This is a full and timely response to the outstanding non-final Office Action mailed November 8, 2004. Upon entry of the amendments in this response, claims 11 – 38 remain pending. More specifically, Applicants add new claim 38 and cancel claims 1 – 10 without prejudice, waiver, or disclaimer. Applicants cancel claims 1 – 10 merely to reduce the number of disputed issues and to facilitate early allowance and issuance of other claims in the present application. Applicants reserve the right to pursue the subject matter of these canceled claims in a continuing application, if Applicants so choose, and do not intend to dedicate the canceled subject matter to the public. Reconsideration and allowance of the application and presently pending claims are respectfully requested. In addition, Applicants do not intend to make any admissions regarding any other statements in the Office Action that are not explicitly referenced in this response.

I. Information Disclosure Statement

The Office Action recites that the listing of references in the specification is not a proper information disclosure statement. In response, the Applicants includes a listing of references on form PTO-1449.

II. Objections to the Drawings

The Office Action indicates that the drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference characters mentioned in the description: 147 (page 14, not in Figure 1B). In response, Applicants have amended page, 14 to

comply with the Office Action's request. More specifically, Applicants replace "1B" with "1C." Applicants submit that no new matter has been added.

III. Election/Restrictions

The Office Action indicates that an election was made to elect Group II (claims 11 – 37). Applicants hereby confirm the election of Group II (claims 11 – 37) and assert that inventorship remains unchanged.

IV. Rejections Under 35 U.S.C. §103

In order for a claim to be properly rejected under 35 U.S.C. §103, the teachings of the cited art reference must suggest all features of the claimed invention to one of ordinary skill in the art.

See, e.g., In re Dow Chemical, 837 F.2d 469, 5 U.S.P.Q.2d 1529, 1531 (Fed. Cir. 1988); In re Keller, 642 F.2d 413, 208 U.S.P.Q. 871, 881 (C.C.P.A. 1981). Further, “[t]he PTO has the burden under section 103 to establish a prima facie case of obviousness. It can satisfy this burden only by showing some objective teaching in the cited art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references.” *In re Fine, 837 F.2d 1071, 5 U.S.P.Q.2d 1596, 1600 (Fed. Cir. 1988).*

A. There is No Motivation to Combine *Guilfoyle* and *Chen*

In order to establish the *prima facie* case of obviousness, the Examiner must establish a suggestion or motivation either in the references themselves, or in the knowledge generally available to one of ordinary skill in the art to modify the reference or combine reference teachings in order to result in the claimed invention. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984). In the present case, the *prima facie* case of obviousness has not been established because there is no suggestion or motivation in the art to combine *Guilefoyle* with *Chen*.

Further, the Office cannot pick and choose among isolated disclosures in the cited art with the invention(s) in mind. This is impermissible hindsight reconstruction, and is also further evidence of a lack of suggestion or motivation to combine the references. *In re Fine* at 1075. Here, the Office has chosen among very isolated disclosures in different arts in order to find all of the ingredients found in the present claims. Thus, this is impermissible hindsight reconstruction and proves that there was no suggestion or motivation in these references to combine them. Further there is no motivation to combine the teachings of *Guilfoyle* with the teachings of *Chen* as recited in the Office Action's reference to *Guilfoyle*, paragraph 136, for at least the reason that this paragraph (and further, the rest of the disclosure) fails to disclose the Office Action's asserted motivation. For at least these reasons Applicants assert that combining of *Guilfoyle* with *Chen* is improper.

B. **Claims 11, 15 – 18, 25 – 28, 30 - 32 and 37 are Patentable Over *Guilfoyle* and *Chen***

1. **Claim 11 is Patentable Over *Guilfoyle* and *Chen***

The Office Action indicates that claim 11 stands rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. publication number 2002/0067882 to *Guilfoyle* (“*Guilfoyle*”) in view of *Chen* (R. T. Chen, F. Li, M. Dubinovsky, O. Ershov, “Si-Based Surface-Releif Polygonal Gratings for 1-to-Many Wafer Scale Optical Clock Signal Distribution,” IEEE Photonics Technology Letters, Vol. 8, No. 8, August 1996) (“*Chen*”). Applicants respectfully traverse this rejection for at least the reason that *Guilfoyle* in view of *Chen* fails to disclose, teach, or suggest all of the elements of claim 11.

More specifically, the Office Action recites that

Guilfoyle teaches a structure for optical chip-to-chip clock distribution comprising a waveguide core... a first cladding layer... disposed on the core comprising diffraction gratings... with diffraction a clock signal vertically to horizontally to horizontally to vertically again. (p. 6, second full paragraph).

However, Applicants respectfully disagree. First, Applicants submit that *Guilfoyle* fails to teach “a first cladding layer ***disposed on the back-side of the integrated circuit device***,” as recited in claim 11. As illustrated in Figure 21, the cladding layer is located adjacent to GaAs, and Waveguide. As is evident from this figure, the cladding layer is not “disposed on the back-side of the integrated circuit device.” Further, there is no suggestion of any configuration where the cladding layer is disposed on the back-side of the integrated circuit device in either *Guilfoyle* or *Chen* to make this configuration. For at least this reason, claim 11 is patentable over *Guilfoyle*

in view of *Chen*.

Additionally, there is no mention in either *Guilfoyle* or *Chen* of “a core layer disposed on the first cladding layer, wherein the core layer includes at least one vertical-to-horizontal input diffraction grating, at least one horizontal-to-horizontal diffraction grating, and at least one horizontal-to-vertical output diffraction grating.” The Office Action asserts that the Waveguide of *Guilfoyle*’s Figure 21 constitutes a “waveguide core.” However, Applicants assert that a “waveguide core” cannot reasonably be considered equivalent to a “core layer includes at least one vertical-to-horizontal input diffraction grating, at least one horizontal-to-horizontal diffraction grating, and at least one horizontal-to-vertical output diffraction grating.” Applicants request that future Office Actions particularly point out each element of claim 11.

Additionally, the Office Action recites that *Chen* discloses

...fan-out horizontal to horizontal diffraction gratings (part of silicon substrates) and multiple output horizontal to vertical diffraction gratings (labeled Output Grating Coupler) to create fan-out grating structures like the ones shown in Figure 2 so that an optical clock signal can propagate vertically through the substrate and vertical to horizontal grating to the core then laterally through the core and horizontal to horizontal gratings to a horizontal to vertical grating distribute the signal through to a circuit...” (beginning p. 5, last paragraph).

However, Applicants assert that nothing in FIGS. 1 or 2 of *Chen* illustrates “a core layer disposed on the first cladding layer, wherein the core layer includes at least one vertical-to-horizontal input diffraction grating, at least one horizontal-to-horizontal diffraction grating, and at least one horizontal-to-vertical output diffraction grating,” as recited in claim 11.

The Office Action asserts that FIG. 1 illustrates “an input vertical to horizontal diffraction grating (at the input clock signal).” However, a “polygonal grating coupler,” as shown in FIG. 1 of *Chen* cannot reasonably be compared to “at least one vertical-to-horizontal input diffraction grating.” Applicants request that future Office Actions particularly point out each element of claim 11.

Similarly, the Office Action asserts FIG. 1 illustrates “multiple multiplexed... fan-out horizontal to horizontal diffraction gratings” (p. 5, third full paragraph). However, as shown in FIG. 1 of *Chen*, there is nothing relating to “at least one horizontal-to-horizontal input diffraction grating,” as illustrated in claim 11. Applicants request that future Office Actions particularly point out each element of claim 11.

Further, the Office Action asserts FIG. 1 illustrates “multiple horizontal to vertical diffraction gratings,” (OA p. 5, third full paragraph). However, as shown in FIG. 1 of *Chen*, there is nothing relating to “at least one horizontal-to-vertical output diffraction grating,” as recited in claim 11. Applicants request that future Office Actions particularly point out each element of claim 11.

Finally, Applicants assert that there is no motivation to combine *Guilfoyle* and *Chen*. It has often been noted that, “[h]umans must work with old elements, most if not all of which will normally be found somewhere in an examination of the prior art.” *Connell v. Sears, Roebuck & Co.*, 722 F2d 1542, 1549, 220 U.S.P.Q. 193 (Fed. Cir. 1983). Furthermore, that features, even distinguishing features, are “disclosed” in the cited art is alone insufficient. As indicated above, it is common to find elements or features somewhere in the cited art. Moreover, most if not all

elements perform their ordained and expected function. The test is whether the claimed invention as a whole, in light of all the teachings of the references in their entireties, would have been obvious to one of ordinary skill in the art at the time the invention was made. *Id.*

In this regard, Applicants note that there must not only be a suggestion to combine the functional or operational aspects of the combined references, but that the Federal Circuit also requires the cited art to suggest **both** the combination of elements **and** the structure resulting from the combination. *Stiftung v. Renishaw PLC*, 945 Fed.2d 1173 (Fed. Cir. 1991). Therefore, in order to sustain an obviousness rejection based upon a combination of any two or more cited art references, the cited art must properly suggest the desirability of combining the particular elements.

The Office Action asserts that “[t]he motivation [of combining *Guilfoyle* and *Chen*] would have been to achieve a fan-out distribution of an optical clock signal with improved efficiency through which coupling efficiency (*Guilfoyle*, paragraph 0136)” (OA p. 7, line 1). However, there is no motivation to combine the teachings of *Guilfoyle* with the teachings of *Chen* as recited in the Office Action’s reference to *Guilfoyle*, paragraph 136, for at least the reason that this paragraph (and further, the rest of the disclosure) fails to disclose the Office Action’s asserted motivation. Applicants respectfully assert that each of the Examiner’s above arguments is a classic example of hindsight reasoning and, in particular, respectfully asserts that the Office Action has pointed to **no teaching within either of the references that relates the desirability of combining the selected features**. Thus, as a matter of law, the rejections are improper. As discussed above, it is the cited art that must properly suggest the desirability of combining the particular elements, for it is axiomatic that all elements and features are taught somewhere in the cited art.

For at least these reasons, Applicants assert that claim 11 is patentable over the combination of *Guilfoyle* and *Chen*.

2. Claim 16 is patentable Over *Guilfoyle* and *Chen*

The Office Action indicates that “[regarding claim 16,] *Guilfoyle* further teaches a chip-level detector... optical source... which inherently includes an optical via to transmit the source signal...” (OA p. 6, second full paragraph).

Applicants respectfully traverse the finding of inherency. It is well established that “[t]o establish inherency, the extrinsic evidence must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.” *In Re Anthony J. Robertson*, 98-1270 (Fed. Cir. 1999).

Applicants assert that a structure “comprising at least one chip level optical via...” (claim 16) is not well known and expected in the art. In accordance with *In re Robertson*, 169 F.3d 743, 745, 49 U.S.P.Q.2D (BNA) 1949, 1950-51 (Fed. Cir. 1999), Applicants traverse the inherency finding, and submit that claim 16, as amended is patentable over *Chen*, in combination with *Guilfoyle*.

3. Claim 25 is Patentable Over *Guilfoyle* and *Chen*

The Office Action indicates that claim 25 stands rejected under 35 U.S.C. 103(a) as being

unpatentable over U.S. publication number 2002/0067882 to Guilfoyle (“*Guilfoyle*”) and further in view of Chen (R. T. Chen, F. Li, M. Dubinovsky, O. Ershov, “Si-Based Surface-Relief Polygonal Gratings for 1-to-Many Wafer Scale Optical Clock Signal Distribution,” IEEE Photonics Technology Letters, Vol. 8, No. 8, August 1996) (*Chen*). Applicants respectfully traverse this rejection for at least the reason that *Guilfoyle* in view of *Chen* fails to disclose, teach, or suggest all of the elements of claim 25.

More specifically, the Office Action recites that

Guilfoyle teaches a structure for optical chip-to-chip clock distribution comprising a waveguide core... a first cladding layer... disposed on the core comprising diffraction gratings... with diffraction a clock signal vertically to horizontally to horizontally to vertically again. (p. 6, second full paragraph).

However, Applicants respectfully disagree. First, there is no mention in either *Guilfoyle* or *Chen* of “structure having a core layer disposed on the back-side of the structure, at least one vertical-to-horizontal input diffraction grating within the core layer, at least one horizontal-to-horizontal diffraction grating within the core layer, at least one horizontal-to-vertical diffraction output grating within the core layer, and at least one cladding layer engaging the core layer...” The Office Action suggests that FIG. 1 of *Chen* discloses a similar configuration, however, upon careful examination, Applicants assert that *Chen* fails to disclose a structure with the combination of “at least one vertical-to-horizontal input diffraction grating within the core layer, at least one horizontal-to-horizontal diffraction grating within the core layer, [and] at least one horizontal-to-vertical diffraction output grating within the core layer.” Applicants request that future Office Actions particularly point out each element of claim 25. For at least this reason,

Applicants assert that *Guilfoyle* also fails to disclose, teach, or suggest all of the limitations of claim 25.

Additionally, Applicants assert that *Chen* and *Guilfoyle* fail to disclose “[a] device... wherein an optical clock signal is propagated vertically through the structure substrate to the core layer, into the at least one vertical-to-horizontal input diffraction grating and is then distributed laterally through the at least one horizontal-to-horizontal diffraction grating to the at least one horizontal-to-vertical output diffraction grating, which distributes the optical clock signal vertically back through the structure.” Nowhere in either *Chen* or *Guilfoyle* is there any mention of such a configuration. Applicants request that future Office Actions particularly point out each element of claim 25. For at least this reason, claim 25 is patentable over *Guilfoyle* in view of *Chen*.

Finally, Applicants assert that there is no motivation to combine *Guilfoyle* and *Chen*. It has often been noted that, “[h]umans must work with old elements, most if not all of which will normally be found somewhere in an examination of the prior art.” *Connell v. Sears, Roebuck & Co.*, 722 F2d 1542, 1549, 220 U.S.P.Q. 193 (Fed. Cir. 1983). Furthermore, that features, even distinguishing features, are “disclosed” in the cited art is alone insufficient. As indicated above, it is common to find elements or features somewhere in the cited art. Moreover, most if not all elements perform their ordained and expected function. The test is whether the claimed invention as a whole, in light of all the teachings of the references in their entireties, would have been obvious to one of ordinary skill in the art at the time the invention was made. *Id.*

In this regard, Applicants note that there must not only be a suggestion to combine the functional or operational aspects of the combined references, but that the Federal Circuit also requires the cited art to suggest ***both*** the combination of elements ***and*** the structure resulting from the combination. *Stiftung v. Renishaw PLC*, 945 Fed.2d 1173 (Fed. Cir. 1991). Therefore, in order to sustain an obviousness rejection based upon a combination of any two or more cited art references, the cited art must properly suggest the desirability of combining the particular elements.

The Office Action asserts that “[t]he motivation [of combining *Guilfoyle* and *Chen*] would have been to achieve a fan-out distribution of an optical clock signal with improved efficiency through which coupling efficiency (*Guilfoyle*, paragraph 0136)” (OA p. 7, line 1). However, there is no motivation to combine the teachings of *Guilfoyle* with the teachings of *Chen* as recited in the Office Action’s reference to *Guilfoyle*, paragraph 136, for at least the reason that this paragraph (and further, the rest of the disclosure) fails to disclose the Office Action’s asserted motivation. Applicants respectfully assert that each of the Examiner’s above arguments is a classic example of hindsight reasoning and, in particular, respectfully asserts that the Office Action has pointed to ***no teaching within either of the references that relates the desirability of combining the selected features***. Thus, as a matter of law, the rejections are improper. As discussed above, it is the cited art that must properly suggest the desirability of combining the particular elements, for it is axiomatic that all elements and features are taught somewhere in the cited art.

5. Claim 28 is Patentable Over *Guilfoyle* and *Chen*

The Office Action indicates that claim 28 stands rejected under 35 U.S.C. 103(a) as being

unpatentable over U.S. publication number 2002/0067882 to Guilfoyle (“*Guilfoyle*”) and further in view of Chen (R. T. Chen, F. Li, M. Dubinovsky, O. Ershov, “Si-Based Surface-Releif Polygonal Gratings for 1-to-Many Wafer Scale Optical Clock Signal Distribution,” IEEE Photonics Technology Letters, Vol. 8, No. 8, August 1996) (*Chen*). Applicants respectfully traverse this rejection for at least the reason that *Guilfoyle* in combination with *Chen* fails to disclose, teach, or suggest all of the elements of claim 28.

More specifically, the Office Action recites that

...fan-out horizontal to horizontal diffraction gratings (part of silicon substrates) and multiple output horizontal to vertical diffraction gratings (labeled Output Grating Coupler) to create fan-out grating structures like the ones shown in Figure 2 so that an optical clock signal can propagate vertically through the substrate and vertical to horizontal grating to the core then laterally through the core and horizontal to horizontal gratings to a horizontal to vertical grating distribute the signal through to a circuit...” (beginning p. 5, last paragraph).

However, Applicants assert that nothing in FIGS. 1 or 2 of *Chen* illustrates “forming vertical-to-horizontal input diffraction gratings within the core layer; forming horizontal-to-horizontal diffraction gratings within the core layer; and forming horizontal-to-vertical output diffraction gratings within the core layer,” as recited in claim 28. Applicant refers to FIG. 1 of *Chen*. Nowhere in *Chen*, especially FIG. 1 is there mention of “forming vertical-to-horizontal input diffraction gratings within the core layer; forming horizontal-to-horizontal diffraction gratings within the core layer; and forming horizontal-to-vertical output diffraction gratings within the core layer” as recited in claim 28. Applicants request that future Office Actions particularly point out each element in claim 28.

The Office Action asserts that FIG. 1 illustrates “an input vertical to horizontal diffraction grating (at the input clock signal).” However, a “polygonal grating coupler” cannot reasonably be compared to “forming vertical-to-horizontal input diffraction gratings within the core layer.” Applicants request that future Office Actions particularly point out each element in claim 28.

Similarly, the Office Action asserts FIG. 1 illustrates “multiple multiplexed... fan-out horizontal to horizontal diffraction gratings” (p. 5, third full paragraph). However, as shown in FIG. 1 of *Chen*, there is nothing relating to “forming horizontal-to-horizontal input diffraction gratings within the core layer,” as illustrated in claim 28. Applicants request that future Office Actions particularly point out each element in claim 28.

Additionally, the Office Action asserts FIG. 1 illustrates “multiple horizontal to vertical diffraction gratings,” (OA p. 5, third full paragraph). However, as shown in FIG. 1 of *Chen*, there is nothing relating to “forming horizontal-to-vertical output diffraction gratings within the core layer,” as recited in claim 28. Applicants request that future Office Actions particularly point out each element in claim 28.

For at least these reasons, Applicants assert that claim 28 is patentable over the combination of *Guilfoyle* and *Chen*.

In addition, the Office Action recites that “[regarding claim 28,] Chen teaches a structure, system and therefore an inherent method for fabricating that would involve providing the following structure...” (OA p. 5, third full paragraph).

Applicants respectfully traverse the finding of inherency. It is well established that “[t]o establish inherency, the extrinsic evidence must make clear that the missing descriptive matter is

necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.” *In Re Anthony J. Robertson*, 98-1270 (Fed. Cir. 1999).

Applicants assert that “a method for fabricating a device having unfocused guided-wave optical clock distribution...” (claim 28) is not well known and expected in the art. In accordance with *In re Robertson*, 169 F.3d 743, 745, 49 U.S.P.Q.2D (BNA) 1949, 1950-51 (Fed. Cir. 1999), Applicants traverse the inherency finding, and submit that claim 28, as amended is patentable over *Chen*, in combination with *Guilfoyle*.

Finally, Applicants assert that there is no motivation to combine *Guilfoyle* and *Chen*. It has often been noted that, “[h]umans must work with old elements, most if not all of which will normally be found somewhere in an examination of the prior art.” *Connell v. Sears, Roebuck & Co.*, 722 F2d 1542, 1549, 220 U.S.P.Q. 193 (Fed. Cir. 1983). Furthermore, that features, even distinguishing features, are “disclosed” in the cited art is alone insufficient. As indicated above, it is common to find elements or features somewhere in the cited art. Moreover, most if not all elements perform their ordained and expected function. The test is whether the claimed invention as a whole, in light of all the teachings of the references in their entireties, would have been obvious to one of ordinary skill in the art at the time the invention was made. *Id.*

In this regard, Applicants note that there must not only be a suggestion to combine the functional or operational aspects of the combined references, but that the Federal Circuit also requires the cited art to suggest ***both*** the combination of elements ***and*** the structure resulting from the combination. *Stiftung v. Renishaw PLC*, 945 Fed.2d 1173 (Fed. Cir. 1991). Therefore, in order to sustain an obviousness rejection based upon a combination of any two or more cited art references, the cited art must properly suggest the desirability of combining the particular elements.

The Office Action asserts that “[t]he motivation [of combining *Guilfoyle* and *Chen*] would have been to achieve a fan-out distribution of an optical clock signal with improved efficiency through which coupling efficiency (*Guilfoyle*, paragraph 0136)” (OA p. 7, line 1). However, there is no motivation to combine the teachings of *Guilfoyle* with the teachings of *Chen* as recited in the Office Action’s reference to *Guilfoyle*, paragraph 136, for at least the reason that this paragraph (and further, the rest of the disclosure) fails to disclose the Office Action’s asserted motivation. Applicants respectfully assert that each of the Examiner’s above arguments is a classic example of hindsight reasoning and, in particular, respectfully asserts that the Office Action has pointed to ***no teaching within either of the references that relates the desirability of combining the selected features***. Thus, as a matter of law, the rejections are improper. As discussed above, it is the cited art that must properly suggest the desirability of combining the particular elements, for it is axiomatic that all elements and features are taught somewhere in the cited art.

For at least these reasons, Applicants assert that claim 28 is patentable over the combination of *Guilfoyle* and *Chen*.

6. Claim 37 is Patentable Over *Guilfoyle* and *Chen*

The Office Action indicates that claim 37 stands rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. publication number 2002/0067882 to *Guilfoyle* (“*Guilfoyle*”) and further in view of *Chen* (R. T. Chen, F. Li, M. Dubinovsky, O. Ershov, “Si-Based Surface-Relief Polygonal Gratings for 1-to-Many Wafer Scale Optical Clock Signal Distribution,” IEEE Photonics Technology Letters, Vol. 8, No. 8, August 1996) (*Chen*). Applicants respectfully traverse this rejection for at least the reason that *Guilfoyle* in view of *Chen* fails to disclose, teach, or suggest all of the elements of claim 37.

More specifically, the Office Action recites that

...fan-out horizontal to horizontal diffraction gratings (part of silicon substrates) and multiple output horizontal to vertical diffraction gratings (labeled Output Grating Coupler) to create fan-out grating structures like the ones shown in Figure 2 so that an optical clock signal can propagate vertically through the substrate and vertical to horizontal grating to the core then laterally through the core and horizontal to horizontal gratings to a horizontal to vertical grating distribute the signal through to a circuit...” (beginning p. 5, last paragraph).

However, Applicants assert that nothing in FIGS. 1 or 2 of *Chen* illustrates “means for forming vertical-to-horizontal input diffraction gratings within the core layer; means for forming horizontal-to-horizontal diffraction gratings within the core layer; and means for forming horizontal-to-vertical output.

The Office Action asserts that FIG. 1 illustrates “an input vertical to horizontal diffraction grating (at the input clock signal).” However, this cannot be reasonably compared to a “means

for forming vertical-to-horizontal input diffraction gratings within the core layer.” Applicants request that future Office Actions particularly point out each element of claim 37.

Similarly, the Office Action asserts FIG. 1 illustrates “multiple multiplexed... fan-out horizontal to horizontal diffraction gratings” (p. 5, third full paragraph). However, as shown in FIG. 1 of *Chen*, there is nothing relating to “means for forming horizontal-to-horizontal diffraction gratings within the core layer,” as illustrated in claim 37. Applicants request that future Office Actions particularly point out each element of claim 37.

Further, the Office Action asserts FIG. 1 illustrates “multiple horizontal to vertical diffraction gratings,” (OA p. 5, third full paragraph). However, as shown in FIG. 1 of *Chen*, there is nothing relating to “means for forming horizontal-to-vertical output,” as recited in claim 37. Applicants request that future Office Actions particularly point out each element of claim 37.

Finally, Applicants assert that there is no motivation to combine *Guilfoyle* and *Chen*. It has often been noted that, “[h]umans must work with old elements, most if not all of which will normally be found somewhere in an examination of the prior art.” *Connell v. Sears, Roebuck & Co.*, 722 F2d 1542, 1549, 220 U.S.P.Q. 193 (Fed. Cir. 1983). Furthermore, that features, even distinguishing features, are “disclosed” in the cited art is alone insufficient. As indicated above, it is common to find elements or features somewhere in the cited art. Moreover, most if not all elements perform their ordained and expected function. The test is whether the claimed invention as a whole, in light of all the teachings of the references in their entireties, would have been obvious to one of ordinary skill in the art at the time the invention was made. *Id.*

In this regard, Applicants note that there must not only be a suggestion to combine the functional or operational aspects of the combined references, but that the Federal Circuit also requires the cited art to suggest ***both*** the combination of elements ***and*** the structure resulting from the combination. *Stiftung v. Renishaw PLC*, 945 Fed.2d 1173 (Fed. Cir. 1991). Therefore, in order to sustain an obviousness rejection based upon a combination of any two or more cited art references, the cited art must properly suggest the desirability of combining the particular elements.

The Office Action asserts that “[t]he motivation [of combining *Guilfoyle* and *Chen*] would have been to achieve a fan-out distribution of an optical clock signal with improved efficiency through which coupling efficiency (*Guilfoyle*, paragraph 0136)” (OA p. 7, line 1). However, there is no motivation to combine the teachings of *Guilfoyle* with the teachings of *Chen* as recited in the Office Action’s reference to *Guilfoyle*, paragraph 136, for at least the reason that this paragraph (and further, the rest of the disclosure) fails to disclose the Office Action’s asserted motivation. Applicants respectfully assert that each of the Examiner’s above arguments is a classic example of hindsight reasoning and, in particular, respectfully asserts that the Office Action has pointed to ***no teaching within either of the references that relates the desirability of combining the selected features***. Thus, as a matter of law, the rejections are improper. As discussed above, it is the cited art that must properly suggest the desirability of combining the particular elements, for it is

For at least these reasons, Applicants assert that claim 37 is patentable over the combination of *Guilfoyle* and *Chen*.

7. **Claims 15 – 18, 26 – 27, 30 – 32, and 37 are Patentable Over *Guilfoyle* and *Chen***

The Office Action indicates that claims 15 – 18, 26 – 28, 30 – 32, and 37 stand rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. publication number 2002/0067882 to *Guilfoyle* (“*Guilfoyle*”) and further in view of *Chen* (R. T. Chen, F. Li, M. Dubinovsky, O. Ershov, “Si-Based Surface-Releif Polygonal Gratings for 1-to-Many Wafer Scale Optical Clock Signal Distribution,” IEEE Photonics Technology Letters, Vol. 8, No. 8, August 1996) (Chen). Applicants respectfully traverse this rejection for at least the reason that dependent claims 15 - 18 are allowable for at least the reason that these claims depend from allowable independent claim 11. Further, dependent claims 26 - 27 are believed to be allowable for at least the reason that they depend from allowable independent claim 25. Finally, dependent claims 30 – 32 are believed to be allowable for at least the reason that these claims depend from claim 28. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596, 1600 (Fed. Cir. 1988).

C. **Claims 13, 19 – 22, 33, 35 and 36 are Patentable Over *Guilfoyle* and *Chen* and further in View of *Brophy***

1. **Claim 19 is Patentable Over *Guilfoyle* and *Chen* in View of *Brophy***

The Office Action indicates that claim 19 stands rejected under 35 U.S.C. 103(a) as being unpatentable over *Guilfoyle* in view of *Chen* and further in view of U.S. publication number 2003/0034538 to *Brophy* (“*Brophy*”). Applicants respectfully traverse this rejection for at least the reason that *Guilfoyle* in view of *Chen* in view of *Brophy* fails to disclose, teach, or suggest all of the elements of claim 19.

More specifically, the Office Action recites that

...fan-out horizontal to horizontal diffraction gratings (part of silicon substrates) and multiple output horizontal to vertical diffraction gratings (labeled Output Grating Coupler) to create fan-out grating structures like the ones shown in Figure 2 so that an optical clock signal can propagate vertically through the substrate and vertical to horizontal grating to the core then laterally through the core and horizontal to horizontal gratings to a horizontal to vertical grating distribute the signal through to a circuit..." (beginning p. 5, last paragraph).

However, Applicants assert that nothing in FIGS. 1 or 2 of *Chen* illustrates “[a] structure... wherein the first cladding layer includes at least one vertical-to-horizontal input diffraction grating, at least one horizontal-to-horizontal diffraction grating, and at least one horizontal-to-vertical output diffraction grating...” Applicants request that future Office Actions particularly point out each element of claim 19.

The Office Action asserts that FIG. 1 illustrates “an input vertical to horizontal diffraction grating (at the input clock signal).” However, this cannot reasonably be compared to “at least one vertical-to-horizontal input diffraction grating.” Applicants request that future Office Actions particularly point out each element of claim 19.

Similarly, the Office Action asserts FIG. 1 illustrates “multiple multiplexed... fan-out horizontal to horizontal diffraction gratings” (p. 5, third full paragraph). However, as shown in FIG. 1 of *Chen*, there is nothing relating to “at least one horizontal-to-horizontal diffraction grating,” as illustrated in claim 19. Applicants request that future Office Actions particularly point out each element of claim 19.

Further, the Office Action asserts FIG. 1 illustrates “multiple horizontal to vertical diffraction gratings,” (OA p. 5, third full paragraph). However, as shown in FIG. 1 of *Chen*, there is nothing relating to “at least one horizontal-to-vertical output diffraction grating,” as recited in claim 19. Applicants request that future Office Actions particularly point out each element of claim 19.

Finally, Applicants assert that there is no motivation to combine *Guilfoyle* and *Chen*. It has often been noted that, “[h]umans must work with old elements, most if not all of which will normally be found somewhere in an examination of the prior art.” *Connell v. Sears, Roebuck & Co.*, 722 F2d 1542, 1549, 220 U.S.P.Q. 193 (Fed. Cir. 1983). Furthermore, that features, even distinguishing features, are “disclosed” in the cited art is alone insufficient. As indicated above, it is common to find elements or features somewhere in the cited art. Moreover, most if not all elements perform their ordained and expected function. The test is whether the claimed invention as a whole, in light of all the teachings of the references in their entireties, would have been obvious to one of ordinary skill in the art at the time the invention was made. *Id.*

In this regard, Applicants note that there must not only be a suggestion to combine the functional or operational aspects of the combined references, but that the Federal Circuit also requires the cited art to suggest **both** the combination of elements **and** the structure resulting from the combination. *Stiftung v. Renishaw PLC*, 945 Fed.2d 1173 (Fed. Cir. 1991). Therefore, in order to sustain an obviousness rejection based upon a combination of any two or more cited art references, the cited art must properly suggest the desirability of combining the particular elements.

The Office Action asserts that “[t]he motivation [of combining *Guilfoyle* and *Chen*] would

have been to achieve a fan-out distribution of an optical clock signal with improved efficiency through which coupling efficiency (Guilfoyle, paragraph 0136)” (OA p. 7, line 1). However, there is no motivation to combine the teachings of *Guilfoyle* with the teachings of *Chen* as recited in the Office Action’s reference to *Guilfoyle*, paragraph 136, for at least the reason that this paragraph (and further, the rest of the disclosure) fails to disclose the Office Action’s asserted motivation. Applicants respectfully assert that each of the Examiner’s above arguments is a classic example of hindsight reasoning and, in particular, respectfully asserts that the Office Action has pointed to ***no teaching within either of the references that relates the desirability of combining the selected features.*** Thus, as a matter of law, the rejections are improper. As discussed above, it is the cited art that must properly suggest the desirability of combining the particular elements, for it is axiomatic that all elements and features are taught somewhere in the cited art.

For at least these reasons, Applicants assert that claim 19 is patentable over the combination of *Guilfoyle* and *Chen*, in view of *Brophy*.

2. Claim 22 is Patentable Over *Guilfoyle* and *Chen* in View of *Brophy*

The Office Action indicates that claim 22 stands rejected under 35 U.S.C. 103(a) as being unpatentable over *Guilfoyle* in view of *Chen* and further in view of U.S. publication number 2003/0034538 to *Brophy* (“*Brophy*”). Applicants respectfully traverse this rejection for at least the reason that *Guifoyle* in view of *Brophy* fails to disclose, teach, or suggest all of the elements of claim 22.

More specifically, the Office Action recites that

Guilfoyle teaches a structure for optical chip-to-chip clock distribution comprising a waveguide core... a first cladding layer... disposed on the core comprising diffraction gratings... with diffraction a clock signal vertically to horizontally to horizontally to vertically again. (p. 6, second full paragraph).

However, Applicants respectfully disagree with this analysis. First, Applicants submit that *Guilfoyle* fails to teach “a first cladding layer *disposed on the back-side of the integrated circuit device,*” as recited in claim 22. As illustrated in Figure 21, Cladding layer is located adjacent to GaAs, and Waveguide. As is evident from this figure, the Cladding layer is not “disposed on the back-side of the integrated circuit device.” Further, there is no suggestion of any configuration where the cladding layer is disposed on the back-side of the integrated circuit device in either *Guilfoyle* or *Chen* to make this configuration. For at least this reason, claim 22 is patentable over *Guilfoyle* in view of *Chen*.

Additionally, there is no mention in *Guilfoyle*, *Chen*, or *Brophy* of the combination “a core layer disposed on the first cladding layer, wherein the core layer includes at least one vertical-to-horizontal input diffraction grating, at least one horizontal-to-horizontal diffraction grating, and at least one horizontal-to-vertical output diffraction grating.” The Office Action asserts that the Waveguide of *Guilfoyle*’s Figure 21 constitutes a “waveguide core.” However, Applicants assert that a “waveguide core” cannot reasonably be considered equivalent to a “core layer includes at least one vertical-to-horizontal input diffraction grating, at least one horizontal-to-horizontal diffraction grating, and at least one horizontal-to-vertical output diffraction

grating.” Applicants request that future Office Actions particularly point out each element of claim 21.

Additionally, the Office Action recites that *Chen* discloses

...fan-out horizontal to horizontal diffraction gratings (part of silicon substrates) and multiple output horizontal to vertical diffraction gratings (labeled Output Grating Coupler) to create fan-out grating structures like the ones shown in Figure 2 so that an optical clock signal can propagate vertically through the substrate and vertical to horizontal grating to the core then laterally through the core and horizontal to horizontal gratings to a horizontal to vertical grating distribute the signal through to a circuit...” (beginning p. 5, last paragraph).

However, Applicants assert that nothing in FIGS. 1 or 2 of *Chen* illustrates “[a] structure...comprising... a second cladding layer disposed on the core layer, wherein the second cladding layer includes at least one vertical-to-horizontal input diffraction grating, at least one horizontal-to-horizontal diffraction grating, and at least one horizontal-to-vertical output diffraction grating...” Applicants request that future Office Actions particularly point out each element of claim 22.

The Office Action asserts that FIG. 1 illustrates “an input vertical to horizontal diffraction grating (at the input clock signal).” However, this cannot reasonably be compared to a “second cladding layer [that] includes at least one vertical-to-horizontal input diffraction grating...” Applicants request that future Office Actions particularly point out each element of claim 22.

Similarly, the Office Action asserts FIG. 1 illustrates “multiple multiplexed... fan-out horizontal to horizontal diffraction gratings” (p. 5, third full paragraph). However, as shown in FIG. 1 of *Chen*, there is nothing relating to “a second cladding layer [that] includes... at least one

horizontal-to-horizontal diffraction grating,” as recited in claim 22. Applicants request that future Office Actions particularly point out each element of claim 22.

Further, the Office Action asserts FIG. 1 illustrates “multiple horizontal to vertical diffraction gratings,” (OA p. 5, third full paragraph). However, as shown in FIG. 1 of *Chen*, there is nothing relating to a “second cladding layer[that] includes at least one horizontal-to-vertical output diffraction grating,” as recited in claim 22. Applicants request that future Office Actions particularly point out each element of claim 22.

Finally, Applicants assert that there is no motivation to combine *Guilfoyle* and *Chen*. It has often been noted that, “[h]umans must work with old elements, most if not all of which will normally be found somewhere in an examination of the prior art.” *Connell v. Sears, Roebuck & Co.*, 722 F2d 1542, 1549, 220 U.S.P.Q. 193 (Fed. Cir. 1983). Furthermore, that features, even distinguishing features, are “disclosed” in the cited art is alone insufficient. As indicated above, it is common to find elements or features somewhere in the cited art. Moreover, most if not all elements perform their ordained and expected function. The test is whether the claimed invention as a whole, in light of all the teachings of the references in their entireties, would have been obvious to one of ordinary skill in the art at the time the invention was made. *Id.*

In this regard, Applicants note that there must not only be a suggestion to combine the functional or operational aspects of the combined references, but that the Federal Circuit also requires the cited art to suggest ***both*** the combination of elements ***and*** the structure resulting from the combination. *Stiftung v. Renishaw PLC*, 945 Fed.2d 1173 (Fed. Cir. 1991). Therefore, in order to sustain an obviousness rejection based upon a combination of any two or more cited art references, the cited art must properly suggest the desirability of combining the particular elements.

The Office Action asserts that “[t]he motivation [of combining *Guilfoyle* and *Chen*] would have been to achieve a fan-out distribution of an optical clock signal with improved efficiency through which coupling efficiency (*Guilfoyle*, paragraph 0136)” (OA p. 7, line 1). However, there is no motivation to combine the teachings of *Guilfoyle* with the teachings of *Chen* as recited in the Office Action’s reference to *Guilfoyle*, paragraph 136, for at least the reason that this paragraph (and further, the rest of the disclosure) fails to disclose the Office Action’s asserted motivation. Applicants respectfully assert that each of the Examiner’s above arguments is a classic example of hindsight reasoning and, in particular, respectfully asserts that the Office Action has pointed to ***no teaching within either of the references that relates the desirability of combining the selected features***. Thus, as a matter of law, the rejections are improper. As discussed above, it is the cited art that must properly suggest the desirability of combining the particular elements, for it is axiomatic that all elements and features are taught somewhere in the cited art.

For at least these reasons, Applicants assert that claim 22 is patentable over the combination of *Guilfoyle* and *Chen*, further in view of *Brophy*.

3. Claim 35 is Patentable Over *Guilfoyle* and *Chen* in View of *Brophy*

The Office Action indicates that claim 35 stands rejected under 35 U.S.C. 103(a) as being unpatentable over *Guilfoyle* in combination with *Chen* and further in view of U.S. publication number 2003/0034538 to *Brophy* (“*Brophy*”). Applicants respectfully traverse this rejection for at least the reason that *Guilfoyle* in combination with *Chen* in view of *Brophy* fails to disclose, teach, or suggest all of the elements of claim 35.

More specifically, the Office Action recites that

...fan-out horizontal to horizontal diffraction gratings (part of silicon substrates) and multiple output horizontal to vertical diffraction gratings (labeled Output Grating Coupler) to create fan-out grating structures like the ones shown in Figure 2 so that an optical clock signal can propagate vertically through the substrate and vertical to horizontal grating to the core then laterally through the core and horizontal to horizontal gratings to a horizontal to vertical grating distribute the signal through to a circuit...” (beginning p. 5, last paragraph).

However, Applicants assert that nothing in FIGS. 1 or 2 of *Chen* illustrates “[a] structure...comprising... a second cladding layer disposed on the core layer, wherein the second cladding layer includes at least one vertical-to-horizontal input diffraction grating, at least one horizontal-to-horizontal diffraction grating, and at least one horizontal-to-vertical output diffraction grating...” Applicants request that future Office Actions particularly point out each element of claim 35.

The Office Action asserts that FIG. 1 illustrates “an input vertical to horizontal diffraction grating (at the input clock signal).” However, this cannot reasonably be compared to a “forming horizontal-to-horizontal diffraction gratings within the first cladding layer; forming horizontal-to-

vertical output diffraction gratings within the first cladding layer; and disposing a core layer on the first cladding layer.” Applicants request that future Office Actions particularly point out each element of claim 35.

Similarly, the Office Action asserts FIG. 1 illustrates “multiple multiplexed... fan-out horizontal to horizontal diffraction gratings” (p. 5, third full paragraph). However, as shown in FIG. 1 of *Chen*, there is nothing relating to “forming horizontal-to-vertical output diffraction gratings within the first cladding layer,” as recited in claim 35. Applicants request that future Office Actions particularly point out each element of claim 35.

Finally, the Office Action asserts FIG. 1 illustrates “multiple horizontal to vertical diffraction gratings,” (OA p. 5, third full paragraph). However, as shown in FIG. 1 of *Chen*, there is nothing relating to a “and at least one horizontal-to-vertical output diffraction grating,” as recited in claim 35. Applicants request that future Office Actions particularly point out each element of claim 35.

For at least these reasons, Applicants assert that claim 35 is patentable over the combination of *Guilfoyle* and *Chen*, further in view of *Brophy*.

Additionally, the Office Action recites that “[regarding claim 35,] Chen teaches a structure, system and therefore an inherent method for fabricating that would involve providing the following structure...” (OA p. 5, third full paragraph).

Applicants respectfully traverse the finding of inherency. It is well established that “[t]o establish inherency, the extrinsic evidence must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by

persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.” *In Re Anthony J. Robertson*, 98-1270 (Fed. Cir. 1999).

Applicants assert that “a method for fabricating a device having unfocused guided-wave optical clock distribution...” (claim 35) is not well known and expected in the art. In accordance with *In re Robertson*, 169 F.3d 743, 745, 49 U.S.P.Q.2D (BNA) 1949, 1950-51 (Fed. Cir. 1999), Applicants traverse the inherency finding, and submit that claim 35, as amended is patentable over *Chen*, in combination with *Guilfoyle*, further in view of *Brophy*.

Finally, Applicants assert that there is no motivation to combine *Guilfoyle* and *Chen*. It has often been noted that, “[h]umans must work with old elements, most if not all of which will normally be found somewhere in an examination of the prior art.” *Connell v. Sears, Roebuck & Co.*, 722 F2d 1542, 1549, 220 U.S.P.Q. 193 (Fed. Cir. 1983). Furthermore, that features, even distinguishing features, are “disclosed” in the cited art is alone insufficient. As indicated above, it is common to find elements or features somewhere in the cited art. Moreover, most if not all elements perform their ordained and expected function. The test is whether the claimed invention as a whole, in light of all the teachings of the references in their entireties, would have been obvious to one of ordinary skill in the art at the time the invention was made. *Id.*

In this regard, Applicants note that there must not only be a suggestion to combine the functional or operational aspects of the combined references, but that the Federal Circuit also requires the cited art to suggest ***both*** the combination of elements ***and*** the structure resulting from the combination. *Stiftung v. Renishaw PLC*, 945 Fed.2d 1173 (Fed. Cir. 1991). Therefore, in order to sustain an obviousness rejection based upon a combination of any two or more cited art references, the cited art must properly suggest the desirability of combining the particular elements.

The Office Action asserts that “[t]he motivation [of combining *Guilfoyle* and *Chen*] would have been to achieve a fan-out distribution of an optical clock signal with improved efficiency through which coupling efficiency (*Guilfoyle*, paragraph 0136)” (OA p. 7, line 1). However, there is no motivation to combine the teachings of *Guilfoyle* with the teachings of *Chen* as recited in the Office Action’s reference to *Guilfoyle*, paragraph 136, for at least the reason that this paragraph (and further, the rest of the disclosure) fails to disclose the Office Action’s asserted motivation. Applicants respectfully assert that each of the Examiner’s above arguments is a classic example of hindsight reasoning and, in particular, respectfully asserts that the Office Action has pointed to ***no teaching within either of the references that relates the desirability of combining the selected features.*** Thus, as a matter of law, the rejections are improper. As discussed above, it is the cited art that must properly suggest the desirability of combining the particular elements, for it is axiomatic that all elements and features are taught somewhere in the cited art.

For at least these reasons, Applicants assert that claim 35 is patentable over the combination of *Guilfoyle* and *Chen*.

4. Claim 36 is Patentable Over *Guilfoyle* and *Chen* in View of *Brophy*

The Office Action indicates that claim 36 stands rejected under 35 U.S.C. 103(a) as being unpatentable over *Guilfoyle* in view of *Chen* and further in view of U.S. publication number 2003/0034538 to *Brophy* ("*Brophy*"). Applicants respectfully traverse this rejection for at least the reason that *Guilfoyle* in view of *Brophy* fails to disclose, teach, or suggest all of the elements of claim 36.

More specifically, the Office Action recites that

...fan-out horizontal to horizontal diffraction gratings (part of silicon substrates) and multiple output horizontal to vertical diffraction gratings (labeled Output Grating Coupler) to create fan-out grating structures like the ones shown in Figure 2 so that an optical clock signal can propagate vertically through the substrate and vertical to horizontal grating to the core then laterally through the core and horizontal to horizontal gratings to a horizontal to vertical grating distribute the signal through to a circuit..." (beginning p. 5, last paragraph).

However, Applicants assert that nothing in FIGS. 1 or 2 of *Chen* illustrates "[a] structure...comprising... a second cladding layer disposed on the core layer, wherein the second cladding layer includes at least one vertical-to-horizontal input diffraction grating, at least one horizontal-to-horizontal diffraction grating, and at least one horizontal-to-vertical output diffraction grating..." Applicants request that future Office Actions particularly point out each element of claim 36.

The Office Action asserts that FIG. 1 illustrates "an input vertical to horizontal diffraction grating (at the input clock signal)." However, this cannot reasonably be compared to "forming vertical-to-horizontal input diffraction gratings within the second cladding layer; forming

horizontal-to-horizontal diffraction gratings within the second cladding layer; and forming horizontal-to-vertical output diffraction gratings within the second cladding layer.” Applicants request that future Office Actions particularly point out each element of claim 36.

Similarly, the Office Action asserts FIG. 1 illustrates “multiple multiplexed... fan-out horizontal to horizontal diffraction gratings” (p. 5, third full paragraph). However, as shown in FIG. 1 of *Chen*, there is nothing relating to “forming horizontal-to-horizontal diffraction gratings within the second cladding layer,” as recited in claim 36.

Further, the Office Action asserts FIG. 1 illustrates “multiple horizontal to vertical diffraction gratings,” (OA p. 5, third full paragraph). However, as shown in FIG. 1 of *Chen*, there is nothing relating to a “forming horizontal-to-vertical output diffraction gratings within the second cladding layer,” as recited in claim 36. Applicants request that future Office Actions particularly point out each element of claim 36.

Finally, Applicants assert that there is no motivation to combine *Guilfoyle* and *Chen*. It has often been noted that, “[h]umans must work with old elements, most if not all of which will normally be found somewhere in an examination of the prior art.” *Connell v. Sears, Roebuck & Co.*, 722 F2d 1542, 1549, 220 U.S.P.Q. 193 (Fed. Cir. 1983). Furthermore, that features, even distinguishing features, are “disclosed” in the cited art is alone insufficient. As indicated above, it is common to find elements or features somewhere in the cited art. Moreover, most if not all elements perform their ordained and expected function. The test is whether the claimed invention as a whole, in light of all the teachings of the references in their entireties, would have been obvious to one of ordinary skill in the art at the time the invention was made. *Id.*

In this regard, Applicants note that there must not only be a suggestion to combine the functional or operational aspects of the combined references, but that the Federal Circuit also requires the cited art to suggest ***both*** the combination of elements ***and*** the structure resulting from the combination. *Stiftung v. Renishaw PLC*, 945 Fed.2d 1173 (Fed. Cir. 1991). Therefore, in order to sustain an obviousness rejection based upon a combination of any two or more cited art references, the cited art must properly suggest the desirability of combining the particular elements.

The Office Action asserts that “[t]he motivation [of combining *Guilfoyle* and *Chen*] would have been to achieve a fan-out distribution of an optical clock signal with improved efficiency through which coupling efficiency (*Guilfoyle*, paragraph 0136)” (OA p. 7, line 1). However, there is no motivation to combine the teachings of *Guilfoyle* with the teachings of *Chen* as recited in the Office Action’s reference to *Guilfoyle*, paragraph 136, for at least the reason that this paragraph (and further, the rest of the disclosure) fails to disclose the Office Action’s asserted motivation. Applicants respectfully assert that each of the Examiner’s above arguments is a classic example of hindsight reasoning and, in particular, respectfully asserts that the Office Action has pointed to ***no teaching within either of the references that relates the desirability of combining the selected features.*** Thus, as a matter of law, the rejections are improper. As discussed above, it is the cited art that must properly suggest the desirability of combining the particular elements, for it is axiomatic that all elements and features are taught somewhere in the cited art.

For at least these reasons, Applicants assert that claim 36 is patentable over the combination of *Guilfoyle* and *Chen*, further in view of *Brophy*.

Additionally, the Office Action recites that “[regarding claim 36,] Chen teaches a

structure, system and therefore an inherent method for fabricating that would involve providing the following structure..." (OA p. 5, third full paragraph).

Applicants respectfully traverse the finding of inherency. It is well established that "[t]o establish inherency, the extrinsic evidence must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient." *In Re Anthony J. Robertson*, 98-1270 (Fed. Cir. 1999).

Applicants assert that "a method for fabricating a device having unfocused guided-wave optical clock distribution..." (claim 36) is not well known and expected in the art. In accordance with *In re Robertson*, 169 F.3d 743, 745, 49 U.S.P.Q.2D (BNA) 1949, 1950-51 (Fed. Cir. 1999), Applicants traverse the inherency finding, and submit that claim 36, as amended is patentable over *Chen*, in combination with *Guilfoyle*, further in view of *Brophy*.

5. Claims 13, 20 – 22 and 33 are Patentable Over Guilfoyle and Chen in View of Brophy

The Office Action indicates that claims 13, 20 – 22 and 33 stand rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. publication number 2002/0067882 to *Guilfoyle* ("*Guilfoyle*") and further in view of *Chen* (R. T. Chen, F. Li, M. Dubinovsky, O. Ershov, "Si-Based Surface-Releif Polygonal Gratings for 1-to-Many Wafer Scale Optical Clock Signal Distribution," IEEE Photonics Technology Letters, Vol. 8, No. 8, August 1996) (*Chen*).

Applicants respectfully traverse this rejection for at least the reason that dependent claim 13 is allowable for at least the reason that these claims depend from allowable independent claim 11. Further, dependent claims 20 – 21 are believed to be allowable for at least the reason that they depend from allowable independent claim 19. Finally, dependent claims 30 – 32 are believed to be allowable for at least the reason that these claims depend from claim 28. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596, 1600 (Fed. Cir. 1988).

D. Claims 12, 14, 29 and 34 are Patentable Over *Guilfoyle* and *Chen* and further in View of *Suzaki*

1. Claim 12 is Patentable Over *Guilfoyle* and *Chen*, further in view of *Suzaki*

The Office Action indicates that claim 12 is rejected under 35 U.S.C. §103(a) as being unpatentable over the combination of *Chen* and *Guilfoyle*, and further in view of *Suzaki*.

Applicants respectfully traverse this rejection for at least the reason that claim the cited art fails to disclose, teach, or suggest all of the limitations of claim 12.

More specifically, Applicants assert that *Suzaki* fails to disclose, teach, or suggest “[a] structure... wherein the first cladding layer is a write-wavelength vertical reflection absorption layer.” Nowhere in *Suzaki* is there mention of a cladding layer or a write-wavelength vertical reflection absorption layer. Applicants assert that exclusion of this element from the cited art renders claim 12 patentable.

2. Claims 12, 14, 29 and 34 are Patentable over *Guilfoyle* and *Chen*, further in view of *Suzaki*

The Office Action indicates that claims 12, 14, 29 and 34 stand rejected under 35 U.S.C. 103(a) as being unpatentable over *Guilfoyle* in view of *Chen* and further in view of U.S. patent number 5,325,225 to *Suzaki* ("*Suzaki*"). *Applicants* respectfully traverse this rejection for at least the reason that dependent claims 12 and 14 are allowable for at least the reason that these claims depend from allowable independent claim 11. Further, dependent claims 29 and 34 are believed to be allowable for at least the reason that they depend from allowable independent claim 28. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596, 1600 (Fed. Cir. 1988).

E. Claims 23 and 24 are Patentable Over *Guilfoyle*, *Chen* and *Brophy* and further in View of *Suzaki*

The Office Action indicates that claims 23 and 24 stand rejected under 35 U.S.C. 103(a) as being unpatentable over *Guilfoyle* in view of *Chen* and further in view of U.S. patent number 5,325,225 to *Suzaki* ("*Suzaki*"). *Applicants* respectfully traverse this rejection for at least the reason that dependent claims 23 and 24 are allowable for at least the reason that these claims depend from allowable independent claim 22. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596, 1600 (Fed. Cir. 1988).

F. Claim 38 is Patentable

Applicants assert that none of the cited art disclose, teach, or suggest all of the limitations of newly added claim 38.

Cited Art Made of Record

The cited art made of record has been considered, but is not believed to affect the patentability of the presently pending claims.

CONCLUSION

In light of the foregoing amendments and for at least the reasons set forth above, Applicants respectfully submit that all objections and/or rejections have been traversed, rendered moot, and/or accommodated, and that the now pending claims 11 – 38 are in condition for allowance. Favorable reconsideration and allowance of the present application and all pending claims are hereby courteously requested. If, in the opinion of the Examiner, a telephonic conference would expedite the examination of this matter, the Examiner is invited to call the undersigned attorney at (770) 933-9500.

Respectfully submitted,



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